



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,002	08/21/2001	Tae-Pok Rhee	5484-92	9272
20575	7590	05/14/2004	EXAMINER	
MARGER JOHNSON & MCCOLLOM PC			TSAI, H JEY	
1030 SW MORRISON STREET			ART UNIT	
PORTLAND, OR 97205			PAPER NUMBER	
			2812	

DATE MAILED: 05/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/935,002	RHEE, TAE-POK	
	<b>Examiner</b>	<b>Art Unit</b>	
	H.Jey Tsai	2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 17-24 and 41-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16, 25-40 and 49-51 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16, 25-40 and 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sundaram et al. 5,372,967 in view of Yamada et al. 6,236,538, both are previously applied, and Lue 5,863,806, newly cited.

The reference(s) teach the features :

Sundaram et al. substantially discloses a method of forming an inductor on the semiconductor device, which includes :

forming a groove with a spiral shape or other shapes in the insulating layer 11, fig. 4+,  
forming a conductive layer 18 on the groove,  
forming cylindrical insulator 19, col. 3, lines 18+,  
forming upper conductive lines 23 contacting the underlying conductive layer 18 to form an inductor, figures 5 and 6.

The difference between the reference(s) and the claims are as follows: Sundaram et al. teaches forming an inductor with a cylindrical insulator formed in the groove of insulating layer but does not teaches semicircle groove and cylindrical insulator formed over the groove.

However, Yamada et al. teaches forming an inductor in the semicircle grooves in figures 35 and

Art Unit: 2812

36 in the insulating layer 1a, 1b, or 41 (since substrate 1 is semicircle, hence, layer 41 inherently a semicircle), a conductive layer 21 and an inductor core 31 and upper conductive line 22 to form an inductor, see col. 25, lines 15+ and figures 1+. And, Lue teaches at fig.1-2 and col. 2, lines 47+, forming lower conductive lines 36 on the groove, the lower conductive lines 36 spaced apart from each other, see fig. 1, growing the oxidizable material layer by oxidation to form a cylindrical insulating layer 38 in the groove such that an upper portion of the cylindrical insulator protrudes from an upper surface of the groove, forming upper conductive lines 48 on the insulator 38/44 to be in contact with the underlying lower conductive lines 36.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have recognized that Sundaram et al's spiral shape groove can be a semicircle groove after etching the insulating layer as suggested by Yamada et al. And cylindrical insulator can be formed over the groove with rounded shape in the upper surface as taught by Lue because the bottom of groove become rounded during the etching of insulating film so that a semi-circle groove is formed and the material increases volume during oxidation so that cylindrical insulator is formed over the surface of the groove.

Applicant's arguments filed on March 1, 2004 have been fully considered but they are not persuasive. Because Sundaram et al. clearly teaches forming cylindrical insulator 19, col. 3, lines 18+ and fig. 5 and groove is a spiral shape, hence, from figs. 4-5, the groove is a semicircle with a cylindrical insulator formed inside. And, Yamada also teaches a semicircle groove in figs. 35A and 35B with insulator inductor core 1a, 1b or 41 formed inside. And, Lue teaches at fig.1-2 and col. 2, lines 47+, a cylindrical insulator formed in the groove and over the groove with rounded shape.

Art Unit: 2812

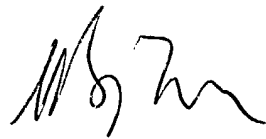
**Any inquiry of a general nature or clerical matters or relating to the status of this application or proceeding should be directed to the customer service whose telephone number is (703) 308-4357 and Fax number (703) 872-9306.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. Jey Tsai whose telephone number is (703) 308-1374. The examiner can normally be reached on from 7:00 Am to 4:00 Pm., Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone number for this Group is (703) 872-9306.

hjt

5/4/04



H. Jey Tsai  
Primary Examiner  
Patent Examining Group 2800